

# Varicose Veins

## A Practical Approach to Treatment

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THE TREATMENT of varicose veins has undergone many changes within the past 20 years. No one method of treatment has been found to give good results consistently. Removal of the involved veins by the internal stripping procedure has been generally the most effective of the surgical methods. Best results are obtained by a combination of stripping, multiple ligations and postoperative injection of sclerotic substances. The purpose of this article is to focus attention on ways and means of handling the patient with varicose veins that will simplify the operation and improve the results.

Selection of the patient for operation is always of primary consideration. Operation is indicated in all cases of varicose veins in which there is pain, pigmentation, sclerotic contracture or ulceration or other stasis changes of the soft tissues. Sometimes, coexisting serious systemic disease may be a contraindication and some observers consider pregnancy a contraindication to surgical treatment of varicose veins. A pregnant patient who had varicosities before she was pregnant, however, should be treated as a nonpregnant patient. The author has treated varicosities in many pregnant women with as good results as in nonpregnant patients.

A thought often expressed is that if the superficial system of veins is obliterated in a person who has had deep venous thrombosis, there will be no way for the blood to return from the extremity. Practically, however, veins that have become varicose, enlarged and incompetent do not carry blood in the proper direction, but instead add to the burden of the competent veins, most of which are within the muscle, or between muscles and form the deep system of veins. If any doubt exists in a particular case, the patient may be made to walk with a tourniquet around the upper thigh sufficiently tight to cut off the superficial venous return. If pain develops surgical treatment of the superficial veins might be contraindicated. Rarely does that occur, however, in a chronically involved leg.

Best results of surgical therapy are obtained by mapping out "blow out" areas, incompetent com-

• Adequate treatment of varicose veins requires thorough mapping of perforating veins, communicating veins and "blow out" areas. Combined ligations, stripping and injection of sclerotic substances after operation is the most effective regimen of therapy.

The technique of stripping is facilitated by isolating the saphenous vein at the ankle, inserting the stripper from below upward, then making a transverse groin incision over the palpable stripper. The tip of the stripper should be twice the diameter of the vein to be removed. Stripping should be done with the patient in the Trendelenburg position.

All patients must be examined at regular intervals after operation and injection of sclerosing material carried out as necessary.

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municating veins and large masses of veins well beforehand. Too often this is not done until just before operation, when the patient is premedicated, it cannot then be done adequately. The multiple tourniquet test can help greatly in determining the sites of incompetent communicating veins. In this test, the veins are emptied by elevation of the extremity and then the suspected area is isolated between two tourniquets. Filling of a vein between the tourniquets in 30 seconds or less is evidence of an incompetent communicating vein which should be marked for ligation at operation. Also helpful for locating incompetent communicating veins is the Pratt test: A tourniquet is applied to the thigh and the entire leg is bandaged up to the tourniquet. The bandage is slowly unwound from above, downward. A bulge appears when the site of an incompetent communicating vein is uncovered.

Skin marking, although seemingly an insignificant detail, is a problem. Many solutions have been tried, but none have proven entirely satisfactory. Markings made with a ball-point pen, silver nitrate or a dye are easily seen but have the disadvantage of washing off, burning the skin or fading out in the preoperative preparation of the extremity. It is best to mark the sites temporarily with a ball-point pen and then after the patient is anesthetized and before the leg is prepared make scratch marks on the skin with a pin or knife. The anesthesia of choice is spinal anesthesia, supplemented

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with Pentothal (thiopental sodium) if the patient wishes to be asleep. The entire extremity and lower abdomen should be prepared as the operative field. A rubber glove provides a cover for the toes and yet permits good exposure of the malleolar regions.

Some difference of opinion exists as to type and location of incision for high saphenous ligation. After adequate trial of various incisions, the author adopted an incision made directly in the groin crease as offering the most advantages. The saphenofemoral junction is higher than it is generally thought to be and this rather high incision gives exposure above the junction where the important tributary veins need to be isolated and divided. Incision at the groin heals primarily and is less painful than other types as there is no pull or skin tension in the groin crease. Dissection beneath the skin may be in a vertical direction just as with the vertical incision, and therefore there is no greater destruction of the lymphatic chain. When tributary vessels are encountered, it is best to section and ligate them immediately to avoid accidental tearing of the vessel and consequent hemorrhage and retraction into the soft tissues.

The saphenous vein is retracted with a Penrose drain until it is unquestionably identified. Identification can only be positive when the junction with the common femoral vein is clearly demonstrated. At this time the bulb is ligated with a free ligature and a suture ligature. The vein is then sectioned distal to the ligatures. An intraluminal stripper may be inserted at this time from above, but very often valve cusps that point upward will arrest the tip of the stripper and keep it from being passed the entire length of the leg. The author has found it better to isolate the greater saphenous vein through an incision 1 centimeter long anterior to the internal malleolus and pass the intraluminal stripper from below upward. Usually it can be passed to the groin without difficulty. This may be done before the groin dissection and palpation of the stripper in the saphenous vein then will facilitate identification of the vein. Sometimes to get it entirely through the vein the stripper may have to be passed in both directions, the vein being tied to it superiorly and inferiorly. This prevents unnecessary loss of blood; and if the stripper, not functioning perfectly, does not remove the segment of vein intact, the fragment left behind is smaller and easier to cope with because of the lesser distance.

As to the kind of stripper, I find one with a very flexible shaft and interchangeable heads (olives) of varying sizes to be the most useful. The Zollinger-Gilmore stripper is one such.

After the stripper has been placed within the vein, attention should be turned to the areas marked for exploration. There are several reasons for delaying

the actual stripping. One is that bleeding after stripping can be greatly decreased if the patient is in a Trendelenburg position, but this position makes dissection and identification of communication veins and vein masses more difficult, as it causes them to collapse. Another reason for delaying stripping is that pressure in the form of elastic bandages should be applied as soon afterward as possible to reduce bleeding, and unless the low ligations have not been done before the stripping, it may be a considerable time before bandages can be applied. The veins underlying the preoperative marks are treated by ligation and segmental removal. If both legs are being treated, they are both brought to this stage.

The patient is tilted into moderate Trendelenburg position for the stripping procedure. Steady traction is applied to the stripper, care being taken not to bend the stripper too acutely lest it be damaged. For the vein to come out in the desired manner, it must pleat or accordion on the stripper. Failure is usually due to using an olive tip that is too small, which may result in inversion and breaking off of the vein or a longitudinal splitting. If either occurs the remaining piece of vein can be re-engaged through a secondary incision made along the course of the vein. The olive tip should be at least twice the diameter of the vein. If the right size is not available, tying a 1-inch Penrose drain securely over the olive will make it function like a larger tip. The drain must be moistened so that it will slide easily, and is pulled through the subcutaneous canal as the vein is removed. When it appears at the fossa ovalis it is secured with a hemostat and the stripper is cut free. If upon careful examination of the vein it is found that all of it has been obtained, the Penrose drain is withdrawn. If some of the vein inverted and then broke, it will be found surrounding the drain and can be removed. After the vein has been stripped, some bleeding is to be expected, but putting the patient in the Trendelenburg position usually controls it adequately; if it does not, residual bleeding is easily controllable by pressure.

Elastic bandages are applied from toe to groin. The wrappings of the thigh should be removed in 24 to 72 hours. The elastic bandages on the lower leg are maintained until there is no longer any significant edema. The incisions of the lower leg heal more slowly than those of the upper, particularly if there are pronounced stasis changes. It is well, therefore, to leave the sutures in place in the lower leg for ten days to two weeks. The groin and thigh incisions heal rapidly and sutures there may be removed in five days.

The author strongly believes that injection therapy has no place in the treatment of the usual varicose vein problem except after surgical resection and obliteration of the large venous channels. The

use of sclerotic agents before operation produces segmental obstruction without obliterating the vein, making stripping ultimately much more difficult. Moreover, if sclerosing drugs are used in large enough amounts to cause thrombosis in a large vein, considerable perivenous reaction results.

If it is to be used, injection therapy should be started approximately a month after operation. The author has found a 1 per cent solution of sodium Sotradecol® (sodium tetradecyl sulfate) satisfactory. Three per cent solution causes too much reaction. Injections, each about 0.5 cc. of solution, are done with the patient standing. Pressure is applied with a cotton ball at the site of injection as the needle is withdrawn. Pressure then is maintained for 24 hours by an elastoplast bandaid and elastic bandaging of the extremity. Usually not more than six injections are done at a sitting, for that is about the limit of calm tolerance for most patients and, also if there is much reaction to the sclerotic substance the pain in the leg will be proportional to the number of injections. Injections are repeated at intervals of three weeks until the desired result is obtained.

To obliterate unsightly superficial "spider-web" veins, one must insert a needle into one of the larger or "feeder" veins. A No. 25 (French) short-bevel needle is advisable. If a long bevel is used, the needle may appear to be within the vein even though part of the bevel is outside, which might lead to extravascular injection of the sclerotic substance. A dilute sclerosing solution such as one-half of 1 per cent sodium Sotradecol or Sotradecol foam produced by shaking a bottle of 1 per cent solution is used. When the needle is properly placed, it is possible to see that the blood is driven out of these fine veins as the injection proceeds. If any swelling is noted, the injection should be stopped immediately.

This thought must be impressed upon the minds of patients with varicose veins: Recurrences are to be expected, and repeated examinations and sclerosing injections at six-month intervals are necessary. Since "See your dentist twice a year" is quite well accepted and dental patients do not feel they have been inadequately treated if another cavity is found on subsequent visits, this may be used as an analogy in explaining the varicose vein problem to patients.

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